

REMARKS

In the Office Action, the Examiner rejected claims 1-19. By this paper, the Applicants added new claims 42-46, and amended claims 1, 2, 10, 11, 13, 17, and 18 for clarification of certain features to expedite allowance of the present application. These amendments do not add any new matter. Upon entry of these amendments, claims 1-19 and 42-46 will be pending in the present application and are believed to be in condition for allowance. In view of the foregoing amendments and the following remarks, the Applicants respectfully request reconsideration and allowance of all pending claims.

Rejections Under 35 U.S.C. § 102

Claims 1-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Muller et al., (U.S. Patent 4,309,632, hereinafter "Muller"). Claims 1 and 11 were rejected under 35 U.S.C. § 102(b) as being anticipated by Vinokurov et al., (U.S. Patent 4,194,137, hereinafter "Vinokurov") and Rozenfeld et al., (U.S. Patent 4,227,102, hereinafter "Rozenfeld"). The Applicants respectfully traverse these rejections.

Features of Independent Claim 1 Omitted from References

Turning to the claims, the amended independent claim 1 recites, *inter alia*, "a first passageway extending through a side wall of the rotatable shaft to the axial passageway, wherein the axial passageway and the first passageway are operable to convey a cryogenic fluid to the superconductive rotor coil; wherein the first passageway is oriented transverse to the axial passageway."

The Muller reference fails to teach or suggest "a first passageway extending through a side wall of the rotatable shaft to the axial passageway," as recited by claim 1. In contrast, the Muller reference discloses an annular supply canal 35 extending through an end (not a side wall) of a shaft end piece 3. *See* Muller, Fig. 1, col. 3, lines 19-39; col. 4, lines 11-19. Specifically, the Muller reference discloses:

A feeding device 32 feeds liquid helium A into the annular chamber 16. This device contains two pieces of double tube 33 and 34 which project into the annular chamber 16, are disposed concentric to the axis of rotation 4, and between which an annular supply canal 35 is formed. This supply canal, extending parallel to the axis, is connected, at its end located in the cavity 27 of the connector head part 2, to one or more supply lines 37 extending radially.

Muller, FIG. 1; col. 4, line 11 – 19 (emphasis added). Clearly, the supply canal 35 does not pass through a side wall. For at least this reason, the Muller reference cannot anticipate independent claim 1 and its dependent claims.

The Muller reference also fails to teach or suggest “the first passageway is oriented transverse to the axial passageway,” as recited by claim 1. The Applicants stress that the rotatable shaft comprises both the axial passageway and the first passageway. In contrast, the Muller reference discloses structures and passageways that are all parallel with one another in the shaft end piece 3. *See* Muller, Fig. 1, col. 3, lines 19-39; col. 4, lines 11-19. In addition, the supply lines 37 are disposed in the stationary or nonrotating connector head part 2, rather than the shaft end piece 3. *See* Muller, Fig. 1, col. 3, lines 40-45; col. 4, lines 16-19. For at least this additional reason, the Muller reference cannot anticipate independent claim 1 and its dependent claims.

Similarly, the Vinokurov and Rozenfeld references fail to teach or suggest the features discussed above with reference to the Muller reference. With respect to the Vinokurov reference, FIG. 1 of this reference illustrates a pipe 2 articulated or movable along the axis of the shaft 3 of a rotor 4 at the end opposite to the drive. The end of the pipe 2 is set with a clearance inside the rotary chamber 6. The chamber 6 is mounted coaxially with the pipe and flares out in the direction of flow of cryogen. *See* Vinokurov, FIG. 1; col. 4, line 54 – 65. Again, the Vinokurov reference fails to teach or suggest “a first passageway extending through a side wall of the rotatable shaft to the axial

passageway” and “the first passageway is oriented transverse to the axial passageway,” as recited by claim 1. For at least these reasons, the Vinokurov reference cannot anticipate independent claim 1 and its dependent claims.

With respect to the Rozenfeld reference, FIG. 1 of this reference illustrates ends of the shaft 2 of the rotor 1 composed of two coaxial pipes 14 and 15 joined together by a thread whose gaps serve as channels for the removal of the coolant 10. The channels 16 communicate with the cavity of the rotor 1. To supply the coolant to the exciting winding 8, the shaft 2 of the rotor 1 is provided with an axial channel 17, which is a vacuum-tight pipe extending at one end of the shaft 2. *See* Rozenfeld, FIG. 1; col. 3, line 31 – 39. Again, the Rozenfeld reference fails to teach or suggest “a first passageway extending through a side wall of the rotatable shaft to the axial passageway” and “the first passageway is oriented transverse to the axial passageway,” as recited by claim 1. For at least these reasons, the Rozenfeld reference cannot anticipate independent claim 1 and its dependent claims.

Features of Independent Claim 11 Omitted from References

As amended, independent claim 11 recites, *inter alia*, “a transfer coupling comprising a passageway operable to be disposed radially around a rotatable shaft to couple cryogenic fluid between a source of cryogenic fluid and another passageway extending through the rotatable shaft.” The amended independent claim 11 further recites, *inter alia*, “wherein the passageway and the other passageway are generally transverse to one another.”

The Muller reference fails to teach or suggest “a transfer coupling comprising a passageway operable to be disposed radially around a rotatable shaft to couple cryogenic fluid between a source of cryogenic fluid,” as recited by claim 11. In contrast, the Muller reference discloses an annular supply canal 35 extending through an end (not radially

around) of a shaft end piece 3. *See* Muller, Fig. 1, col. 3, lines 19-39; col. 4, lines 11-19. Specifically, the Muller reference discloses:

A feeding device 32 feeds liquid helium A into the annular chamber 16. This device contains two pieces of double tube 33 and 34 which project into the annular chamber 16, are disposed concentric to the axis of rotation 4, and between which an annular supply canal 35 is formed. This supply canal, extending *parallel to the axis*, is connected, at its *end* located in the cavity 27 of the connector head part 2, to one or more supply lines 37 extending radially.

Muller, FIG. 1; col. 4, line 11 – 19 (emphasis added). Clearly, the supply canal 35 does not extend radially around the shaft end piece 3. For at least this reason, the Muller reference cannot anticipate independent claim 11 and its dependent claims.

The Muller reference also fails to teach or suggest “the passageway and the other passageway are generally transverse to one another,” as recited by claim 11. In contrast, the Muller reference discloses structures and passageways that are all parallel with one another in the shaft end piece 3. *See* Muller, Fig. 1, col. 3, lines 19-39; col. 4, lines 11-19. For at least this additional reason, the Muller reference cannot anticipate independent claim 11 and its dependent claims.

Similarly, the Vinokurov and Rozenfeld references fail to teach or suggest the features discussed above with reference to the Muller reference. Specifically, the Vinokurov and Rozenfeld references fail to teach or suggest “a transfer coupling comprising a passageway operable to be disposed radially around a rotatable shaft to couple cryogenic fluid between a source of cryogenic fluid” and “the passageway and the other passageway are generally transverse to one another,” as recited by claim 11. For at least these reasons, the Vinokurov and Rozenfeld references cannot anticipate independent claim 11 and its dependent claims.

New Claims

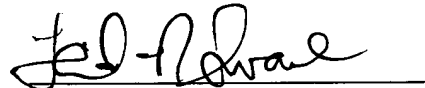
As noted above, the Applicants hereby add new claims 42-46. These claims do not add any new matter. In addition, the Applicants stress that the new claims are currently in condition for allowance for the same reasons as discussed in detail above.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: June 19, 2006



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